

**Dana Nystrom**

## **Lesson 2: Potential and Kinetic Energy**

**4.1 a Energy exists in various forms: heat electric, sound, chemical, mechanical, light**

**4.1b Energy can be transferred from one place to another**

**4.2a Everyday events involve one form of energy being changed into another form.**

**Engage:** When students come in have them come directly to the rug. Remind them that last week they had a chance to sneak peek the unit by reading books on Energy from our Library. Tell them to use this information to help them with my next question...

***What do these five pictures have in common? Turn and Tell your partner. Make sure you explain why you think they go together.***

Tell students that they are correct, they are all different types of energy. Energy is the Ability to do work.

All of these types can be broken even further into two types- Potential and Kinetic Energy.

Share video about Potential and Kinetic Energy:

<https://www.youtube.com/watch?v=ASZv3tlK56k>

Then stop to explain that there are two forms of potential Energy. Gravitational and Elastic.

Gravitational-The amount of energy stored in an object based on the height that the object can fall. The heavier and higher the object, the more potential energy it has.

Elastic Potential Energy- Energy stored when materials stretch or compress like rubber bands.

Gravitational Potential Energy and Elastic Potential Energy:

<https://www.youtube.com/watch?v=Jnj8mc04r9E>

Add new words to glossary!

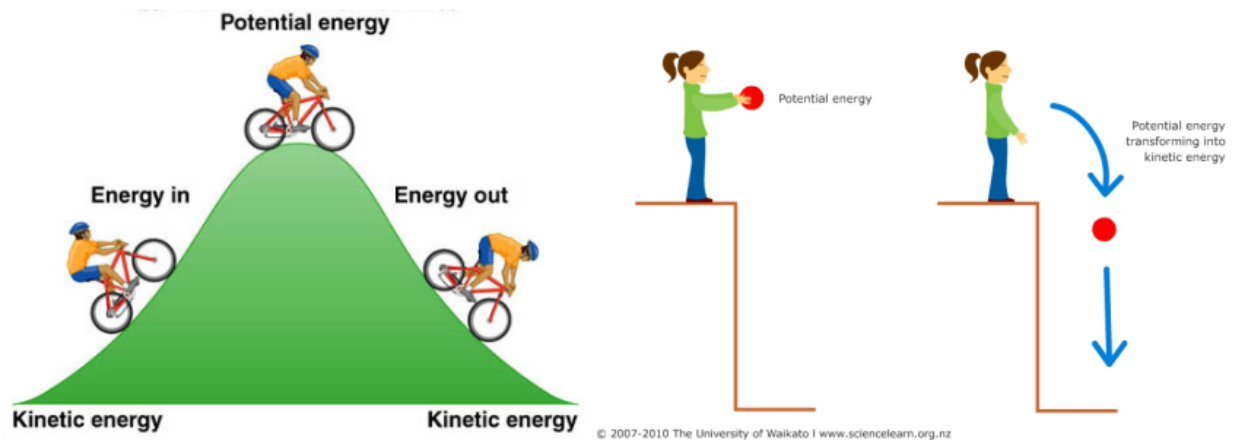
**Explore:**

<https://docs.google.com/document/d/1DIK5Kcjc6nPIMK46USrch6PNJUDQzOY23LAUAVaUm4/edit>

Today we are going to explore the potential in a rubber band. How does the distance that the rubber band is pulled from (potential energy) affect the distance that it goes (kinetic energy).

Name: \_\_\_\_\_

## Potential and Kinetic Energy Task



**Focus Question:** What is the relationship between elastic potential energy and kinetic energy?

**Prediction:** \_\_\_\_\_

**Observations/ Data Table:**

Distance Rubber Band is Pulled

Distance the Rubber Band Flew (in cm)	4 cm	5 cm	6 cm	7 cm	8 cm
Trial 1					
Trial 2					
Trial 3					

**Connections:**

What relationship do you notice between the distance the rubber band is pulled and the distance it flies? Use evidence from your data table to support your claim.

Claims- Things I know	Evidence- How I know. PROOF

**Student Lab Expectations Checklist:**

*If you think you are finished with your work, use this checklist to help you make sure you didn't forget anything.*



Expectation:	I've got this!	Almost there...
I was careful not to hit anyone when I used my rubber bands.		
I collaborated well with my team!		
I was careful and accurate in my measurements.		
I was sure to complete my data table and answer each question on my data sheet.		

**Teacher Rubric:**

4= Student was able to complete all four requirements above in an organized, safe, and collaborative way. Shows understanding of relationship between potential and kinetic energy and can describe the connections well and can translate this idea to other concepts or experiences.

3=Student was able to complete all four requirements above in an organized, safe, and collaborative way. Shows understanding of relationship between potential and kinetic energy.

2= Student was able to complete all four requirements but required frequent reminders from teacher or group members to stay focused or on task.

1= Student had difficulty completing the task and did not show understanding of the connections between potential and kinetic energy.

Questions to ask students:

What pattern do you observe? Is there a relationship between the amount of potential energy and the distance/kinetic energy?

How do you know? What claims that you make by looking at your data? What evidence proves our claim. We will meet at the rug after the explore and discuss CLAIMS and EVIDENCE.

**Elaborate:** Create a bar graph using the data from your experiment. I will model and then students can use their own data.

**Evaluate:** I will use the data collection sheet, and bar graph to assess understanding as well as student comments and observations during the experiment.